

## IV. TURBELLARIA: POLYCLADIDA

By STEPHEN PRUDHOE

THOUGH comprising only three specimens, the collection is an interesting one, since it includes three species which apparently have not been recorded hitherto from the Red Sea.

The condition of the material is satisfactory, and it has been possible to supplement existing descriptions of the three species with some new details of their structure, more especially of the copulatory organs.

Lastly, a brief historical account of the polyclad fauna of the Red Sea is given, together with a list of the species recorded.

### PLANOCERIDAE

#### *Planocera crosslandi* Laidlaw, 1903

(FIG. 1)

A young adult specimen of this species was found in the fauna associated with coral at Sherm Sheik, 2 February. It measures about 28 mm. in length and about 20 mm. in maximum width, which occurs in the middle region of the body.



FIG. 1. *Planocera crosslandi*. Arrangement of eyes (dorsal view).

In the structure of the copulatory organs the present specimen agrees very well with the original description of *P. crosslandi*. The posterior region of the cirrus-cavity bears three very large hook-like structures, one of which is attached to the dorsal wall and the others to the subventral walls of the cavity. These structures are directed posteriorly and lie almost entirely in the spacious male antrum.

*Planocera crosslandi* has been recorded hitherto only from British East Africa.

## LEPTOPLANIDAE

*Notoplana gardineri* (Laidlaw, 1904)

(FIG. 2)

A single individual, provisionally assigned to this species, was found under a rock near the low-tide mark at Sherm Sheik, 15 February. Unfortunately the specimen is damaged, and, as a portion of its hinder region is lost, it is not possible to determine the structure of the female copulatory apparatus.

Transverse serial sections of the copulatory organs of the type-specimen of this species have recently been presented to the British Museum (Natural History) by



FIG. 2. *Notoplana gardineri*. Arrangement of eyes (dorsal view).

Dr. F. F. Laidlaw. The series is incomplete, but, so far as it has been possible to make out, the male copulatory apparatus of the specimen from the Red Sea is indistinguishable, structurally and histologically, from that of the type-material of *N. gardineri* (Laidlaw), a species known hitherto only from Ceylon.

The damaged specimen is somewhat pellucid and measures about 16 mm. in length and about 9 mm. in maximum width. The body is more or less oval in outline. No tentacles have been made out. The eyes are arranged in two elongate groups (Fig. 2). Those in the hinder region of each group are distinctly larger than the remainder and probably represent the tentacular eyes present in other species of *Notoplana*.

The mouth occurs about 10 mm. from the anterior extremity of the body and opens into the hinder region of the pharyngeal chamber. The latter measures about 4.5 mm. in length and contains about 10 pairs of shallow lateral pockets.

The male pore is situated at 3.5 mm. behind the mouth. As is usual in this genus, the ovaries and testes lie in the dorsal and ventral parenchyme respectively. The vasa deferentia unite to open into the proximal end of the arcuate seminal vesicle, which possesses a very thick coat of longitudinal and circular muscle-fibres. This vesicle opens, through the ejaculatory duct, into a well-developed, somewhat pear-shaped prostatic organ lying above the proximal end of the seminal vesicle. The ejaculatory duct projects well into the prostatic organ, the highly glandular epithelium of which completely invests the duct. In this epithelium there are seven elongate pockets, which, together with the ejaculatory duct, open into a small chamber situated in the posterior region of the prostatic organ. From the prostatic chamber a long ductus communis or prostatic canal passes through an extremely thick sheath of muscle-fibres and enters a very small penis-papilla lying in the shallow male antrum. The thick sheath appears to be a continuation of the musculature of the prostatic organ and merges with that of the penis-papilla. There are numerous nuclei present among the muscle-fibres of the sheath, and they seem to congregate more particularly around the prostatic canal.

*N. gardineri* appears to bear a very close resemblance to *Notoplana otophora* (Schmarda, 1859) which was also originally recorded from Ceylon. According to Stummer-Traunfels (1933), the 'ductus communis' or prostatic canal of the type-specimen of *N. otophora* is invested with a deep layer of parenchymatous tissue enclosed in a thick muscular sheath. On the other hand, in *N. gardineri* the prostatic canal is, as stated above, invested solely with an extremely thick musculature of longitudinal and circular fibres. Nuclei are abundant in this musculature, being particularly dense immediately around the prostatic canal. This difference between the two species might be accounted for by the fact that the type-specimen of *N. otophora* had, when examined by Stummer-Traunfels, apparently been stored in preserving fluid for about seventy years. During this time the tissues of the specimen had, no doubt, undergone some maceration and possibly the histology of the structure through which the prostatic canal passes might originally have been similar to that occurring in *N. gardineri*. In other respects, except possibly in the number of eyes, the two species appear to be identical.

#### *Notoplana cotylifera* Meixner, 1907

A single specimen was found in sponges associated with coral at Graa, 30 January. It agrees very well with the description of *N. cotylifera* Meixner, and, as in the original material, a well-developed sucker occurs between the genital pores.

The most striking feature of the female copulatory apparatus in this species is

the pocket-like structure, which Meixner regards provisionally as a rudimentary accessory vesicle, opening into the vagina interna, 'near the 'shell'-chamber. A somewhat similar structure occurs in the present specimen, but in this instance it appears also to open on the dorsal surface of the body, anteriorly to the female genital pore. Unfortunately the condition of the tissues in this region of the body is not very satisfactory, and the presence of a dorsal opening requires confirmation. If a study of new material were to show that the dorsal opening normally occurred in this species, the accessory structure of the female apparatus would appear comparable with the ductus vaginalis present in some other species of Polyclads.

*Notoplana cotylifera* has been recorded previously from the Gulf of Tadjoura, French Somaliland, which is, of course, situated near the southern entrance to the Red Sea. Thus the occurrence of this species in the Gulf of Aqaba is not unexpected.

The history of the Polyclad fauna of the Red Sea apparently begins in the year 1826, when the name *Planaria mülleri* was given by Audouin to a planarian figured, but not described, by Savigny in the same year. Two years later (1828) Leuckart described five new forms from Tor in the Gulf of Suez. This work was shortly followed by that of Ehrenberg (1831), in which a further four new species were described from Tor and the Isle of Ras el Gusr. The descriptions of all these ten species are very incomplete, and it does not appear possible to recognize any of the species with certainty.

After 1831 no further species of Polyclads seem to have been recorded from this region until Boutan (1892) mentioned the occurrence of *Pseudoceros violaceus* (Schmarda) at Port Tewfik. Another thirty years elapsed before Meyer (1922) described three new species from Kosseir. Since the appearance of Meyer's work, Palombi (1928) has recorded, among other species, *Idioplana australiensis* Woodworth<sup>1</sup> from the Port of Suez, and Melouk (1940, 1941) has described two new forms from the Biological Station at Ghardaqa.

The results of the sporadic work done since 1826 indicate that our knowledge of the occurrence and distribution of Polyclads in the Red Sea is, in all probability, very incomplete. It may therefore be deemed useful to tabulate the species, including those in the present collection, that have so far been recorded from the Red Sea. The taxonomy of some of the species is very uncertain, and these are marked with an asterisk in the following table:

<i>Species</i>	<i>Locality</i>
<i>Cestoplana polypora</i> Meyer, 1922 . . . .	Kosseir
' <i>Craspedomata</i> sp.?' Palombi, 1928 . . . .	Gulf of Suez
<i>Cryptophallus aegyptiacus</i> Melouk, 1940 . . . .	El Ataka & Ghardaqa
* <i>Eurylepta flavomarginata</i> Ehrenberg, 1831 . . . .	Ras el Gusr
* <i>Eurylepta praetexta</i> Ehrenberg, 1831 . . . .	Tor
<i>Idioplana australiensis</i> Woodworth, 1898 . . . .	Port of Suez
* <i>Leptoplana hyalina</i> Ehrenberg, 1831 . . . .	Tor

[This species, the type of the genus *Leptoplana*, has been regarded by most early writers as a synonym of *Leptoplana tremellaris* (Müller, 1774).]

<sup>1</sup> Judging from Palombi's description, the material determined by him as *Idioplana australiensis* is probably not identical with that described by Woodworth. In fact, Palombi's material appears to be more closely related to the genus *Idioplanoides* Barbour, 1912, than to *Idioplana* Woodworth, 1898.



Species	Locality
<i>Leptoplana nadiae</i> Melouk, 1941 . . . .	Ghardaqa
<i>Notoplana cotylifera</i> Meixner, 1907 . . . .	Graa
<i>Notoplana gardineri</i> Laidlaw, 1903 . . . .	Sherm Sheik
<i>Paraplanocera marginata</i> Meyer, 1922 . . . .	Kosseir
* <i>Planaria bilobata</i> Leuckart, 1828 . . . .	Tor
* <i>Planaria bituberculata</i> Leuckart, 1828 . . . .	Tor
* <i>Planaria gigas</i> Leuckart, 1828 . . . .	Tor
* <i>Planaria limbata</i> Leuckart, 1828 . . . .	Tor
* <i>Planaria mülleri</i> Audouin, 1826 . . . .	—
[ <i>P. bituberculata</i> and <i>P. mülleri</i> have been generally regarded as synonyms of <i>Stylochus suesensis</i> Ehrbg. If this be accepted, <i>P. mülleri</i> has priority over <i>S. suesensis</i> and therefore becomes the type-species of <i>Stylochus</i> Ehrbg.]	
* <i>Planaria zebra</i> Leuckart, 1828 . . . .	Tor
<i>Planocera crosslandi</i> Laidlaw, 1903 . . . .	Sherm Sheik
<i>Pseudoceros violaceus</i> (Schmarda, 1859) . . . .	Port Tewfik
<i>Stylochus coseirensis</i> Bock, 1927 [ <i>nom. nov.</i> pro <i>Stylochus reticulatus</i> of Meyer, 1922]. . . .	Kosseir
* <i>Stylochus suesensis</i> Ehrenberg, 1831 . . . .	Tor & Port of Suez

## REFERENCES

- AUDOUIN, V. 1826. Explication sommaire des planches. Annelides. *Descr. Égypte, etc. Hist. nat.* **1** (4): 76.
- BOUTAN, L. 1892. Voyage dans la Mer Rouge. *Rev. Biol. Nord France*, **4**: 173-183.
- EHRENBERG, C. G. 1831. *Symbolae physicae, etc.* [Invertebrata.] Berolini.
- LAIDLAW, F. F. 1903. On the marine Fauna of Zanzibar and British East Africa, from collections made by Cyril Crossland in the years 1901 and 1902.—Turbellaria Polycladida. Part I. The Acotylea. *Proc. zool. Soc. London*, **2**: 99-113, pl. ix.
- 1904. Report on the Polyclad Turbellaria collected by Professor Herdman, at Ceylon, in 1902. *Rep. Pearl Fish. Manaar*, Pt. II: 127-136, pl.
- LEUCKART, F. S. 1828. In LEUCKART & RÜPPELL: Neue wirbellose Thiere des Rothen Meeres. *Atlas zu der Reise im nördlichen Afrika von E. Rüppel*. Abth. I, Zoologie: 11 & 15, pl. iii. Frankfurt a. M.
- MEIXNER, A. 1907. Polycladen von der Somaliküste, nebst einer Revision der Stylochinen. *Zeitschr. wiss. Zool.* **88**: 385-498, pls. xxv-xxix.
- MELOUK, M. A. 1940. A new Polyclad from the Red Sea, *Cryptophallus aegypticus* nov. spec. *Bull. Fac. Sci. Egypt. Univ.*, **22**: 125-140, pls. i-ii.
- 1941. *Leptoplana nadiae*, a new Acotylean Polyclad from Ghardaqa (Red Sea). *Bull. Fac. Sci. Egypt. Univ.*, **23**: 41-49, pl. i.
- MEYER, F. 1922. Polycladen von Kosseir (Rotes Meer). *Arch. Naturgesch.*, Abt. A, **87**: 138-158, pls. i-iii.
- PALOMBI, A. 1928. Report on the Turbellaria. [Zool. Results of the Cambridge Expedition to the Suez Canal, 1924. xxxiv.] *Trans. zool. Soc. Lond.*, **22**: 579-631, pl. i.
- STUMMER-TRAUNFELS, R. VON. 1933. Polycladida (contd.). *Bronns Klassen*, **4** Abt. 1c, (179): 3486-3596, pl. i.